

Evaluation Report Storm Shield System™ Insulated Metal Wall Panel Assembly

Manufacturer
Hurricane Protection Systems, LLC.

7217 Ogden Business Lane, # 115
Wilmington, NC 28411
(910) 686-2234

for

Florida Product Approval
FL 12582.1 R2

Florida Building Code 2010
Per Rule 61G20-3

Method: 1 - D

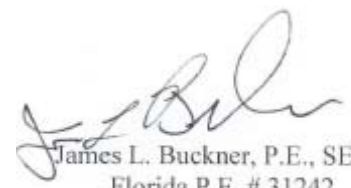
Category: Shutters

Sub - Category: Storm Panels

Product Name: Storm Shield System™
Product Description: Hurricane Protections Panel System

Prepared by:

James L. Buckner, P.E., SECB
Florida Professional Engineer # 31242
Florida Evaluation ANE ID: 1916
Project Manager: Youry Demosthenes
Report(4) No. 11-231-StShSys-LMI-ER_10
Date: 8 / 14 / 12


James L. Buckner, P.E., SECB
Florida P.E. # 31242
8/24/12

Contents:

Evaluation Report Pages 1 – 8

CBUCK, Inc.

1.0 Product

- 1.1 **Manufacturer:** Hurricane Protection Systems, LLC.
- 1.2 **Product Name:** Storm Shield System™

2.0 Evaluation Scope:

- 2.1 **Compliance with the following**
 - Florida Building Code (FBC) 2010
 - International Building Code (IBC) 2009
- 2.2 **Evaluation Method:**
 - Florida Product Approval Rule 61G20-3.005 (1) (d)
- 2.3 **Evaluation Classification:**
 - Category: Shutters
 - Sub Category: Storm Panels
- 2.4 **Properties Evaluated**
 - Structural Properties
- 2.5 **Limits of Evaluation:**
 - This product assembly evaluation is limited to compliance with section 2.1 to section 2.4 of this report.

3.0 Evaluated Uses:

“Storm Shield System™” is used to provide wind and wind-borne debris protection for openings, such as windows and doors. The Storm Shield System™ is installed periodically during high wind events and stored when not being used.

4.0 Product Assembly Description:

4.1 General:

“The Storm Shield System™” is a non-porous hurricane protection system. This system consists of panels made of plastic material, screws and interlocking components.

5.0 General Assembly as Evaluated:

- Shutter Panel
- Extruded Section
- Fasteners
- Support

6.0 Evaluated Support:

6.1 Option 1:

- Material: Wood
- Density/Specific Gravity: 0.42 Minimum

6.2 Option 2:

- Material: Structural Concrete
- Compressive Strength: 3,000 psi Minimum

(Design of support system is outside the scope of this evaluation)

7.0 Structural Performance:

7.1 Wind Resistance:

Allowable Wind Resistance

Panel Maximum Span (in.)	Positive Design Pressure (psf)	Negative Design Pressure (psf)
18	+ 90	- 90
48	+ 70	- 70
78	+ 45	- 50

7.2 Tested Impact Resistance:

Rating: Large Missile Impact
Results: Passed (Per TAS 201 & ASTM E1996)

8.0 Code Compliance:

- 8.1 The product assembly described herein has demonstrated compliance with the Florida Building Code 2010, Standards TAS 201-94, TAS 202-94, TAS 203-94, ASTM E330-02, ASTM E1886-05 and ASTM E1996-06.
- 8.2 The product described herein has demonstrated compliance with the International Building Code 2009, Standards ASTM E330-02, ASTM E1886-06 and ASTM E1996-06.

9.0 Standards Equivalency:

- 9.1 The ASTM E330-97 standard version used to test the evaluated product assembly is equivalent to ASTM E330-02 standard version per Rule 61G20-3.015(1)(a) and (b) .
- 9.2 The ASTM E1996-02 standard version used to test the evaluated product assembly is meets or exceeds the ASTM E1996-06 standard version referenced in the Florida Building Code 2010 and is equivalent for determining code compliance.

10.0 Limitations and Conditions of Use:

10.1 Scope of "Limitations and Conditions of Use" for this evaluation:

This evaluation report for "State Approval" contains technical documentation, specifications and installation method(s) which include "Limitations and Conditions of Use" throughout the report in accordance with Rule 61G20-3.005. Per Rule 61G20-3.004, the Florida Building Commission is the authority to approve products under "State Approval".

10.2 Option for application outside "Limitations and Conditions of Use"

Rule 61G20-3.005(1)(e) allows engineering analysis for "project specific approval by the local authorities having jurisdiction in accordance with the alternate methods and materials authorized in the Code". Any modification of the product as evaluated in this report and approved by the Florida Building Commission is outside the scope of this evaluation and will be the responsibility of others.

- 10.3 This product has been evaluated as a non-porous assembly as defined in ASTM E1996.
- 10.4 This report does not evaluate the use of this product for use in the High Velocity Hurricane Zone code section. (Dade & Broward Counties)
- 10.5 This report does not evaluate the use of this product for use in wind zone 4 per section 1609.1.2.4 nor Essential Facilities per table 1604.5 of FBC 2010.
- 10.6 Fire Classification is outside the scope of Rule 61G20-3, and is therefore not included in this evaluation.

11.0 Quality Assurance:

The manufacturer has demonstrated compliance of products in accordance with the Florida Building Code and Rule 61G20-3.005 (3) for manufacturing under a quality assurance program audited by an approved quality assurance entity through **National Accreditation and Management Institute** (FBC Organization #: QUA 1789).

12.0 Identification:

12.1A permanent label shall be provided for each panel per Florida Building Code 2010, Section 1715.8.1, 1715.8.2 & 1715.8.3.

13.0 Components

13.1 Panel:

Storm Shield Panel

- Manufacturer: King Plastic Corporation
- Manufacturing Location: 1100 N Toledo Blade Blvd.
North Port, FL 34288
- Model Name: King StarBoard®
- Material: Polypropelene
- Density: 81.16 – 84.28 pcf (1.3 -1.35 g/cc)
- Tensile Strength
 - Yield: 3,780 psi Nominal
 - Standard: ASTM D638
- Dimensions
 - Thicknesses: 1/2 in.
 - Height: 20-1/2 in. Maximum
 - Width: 78-1/2 in. Maximum

13.2 Extruded "H" Section:

- Material: Aluminum
- Alloy: 6063 – T5

13.3 Thumb Screw with Washer:

- Material: Screw – Stainless Steel
Knob – Fiberglass Reinforced Nylon
- Size: 1/4 - 20 x 1-1/4 in.
- Corrosion Resistance: Stainless Steel
- Washer Material: Stainless Steel / Neoprene
- Washer Diameter: 10 in.

13.4 Hurricane Panel Anchor Screw (Wood Support):

- Type: Self-Tapping
- Material: Stainless Steel
- Size: # 10 Minimum
- Embedment: 1-1/4 in Minimum

13.5 Hurricane Panel Anchor Screw (Concrete Support):

- Type: Self-Tapping
- Material: Stainless Steel
- Size: 1/4 in Minimum
- Embedment: 1-3/4 in Minimum

14.0 Installation Method:

The Storm Shield System™ shall be installed in compliance with the installation method listed in this report and applicable code sections of FBC 2010. The installation method described herein is in accordance with the scope of this evaluation report. Refer to manufacturer's installation instructions as a supplemental guide for attachment.

(Refer to installation method on Pages 6 through 8 of this evaluation report.)

15.0 Evaluation Reference Data:

15.1 Testing Application Standard (TAS) 201-94

Impact Test Procedures

By American Test Lab North (FBC Organization ID# TST 1555)

Report #: ATLNC 0204.01-05 Dated: 4 / 18 / 05

15.2 Testing Application Standard (TAS) 202-94

Criteria for Testing building Envelope Components using Uniform Static Air Pressure

By American Test Lab North (FBC Organization ID# TST 1555)

Report #: ATLNC 0204.01-05 Dated: 4 / 18 / 05

15.3 Testing Application Standard (TAS) 203-94

Criteria for Testing Products Subject to Cyclic Wind Pressure Loading

By American Test Lab North (FBC Organization ID# TST 1555)

Report #: ATLNC 0204.01-05 Dated: 4 / 18 / 05

15.4 ASTM E330 – 97

Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by uniform Static Air Pressure Difference

By American Test Lab North (FBC Organization ID# TST 1555)

Report #: ATLNC 0204.01-05 Dated: 4 / 18 / 05

15.5 ASTM E1886 – 02

Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) & Exposed Cyclic Pressure Differential

By American Test Lab North (FBC Organization ID# TST 1555)

Report #: ATLNC 0204.01-05 Dated: 4 / 18 / 05

15.6 ASTM E1996 – 02

Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes

By American Test Lab North (FBC Organization ID# TST 1555)

Report #: ATLNC 0204.01-05 Dated: 4 / 18 / 05

15.7 Quality Assurance

By National Accreditation and Management Institute
(FBC Organization #QUA ID:1789)

15.8 Engineering Analysis

By CBUGK Engineering
Report #C09-136, Dated: 5/4/09

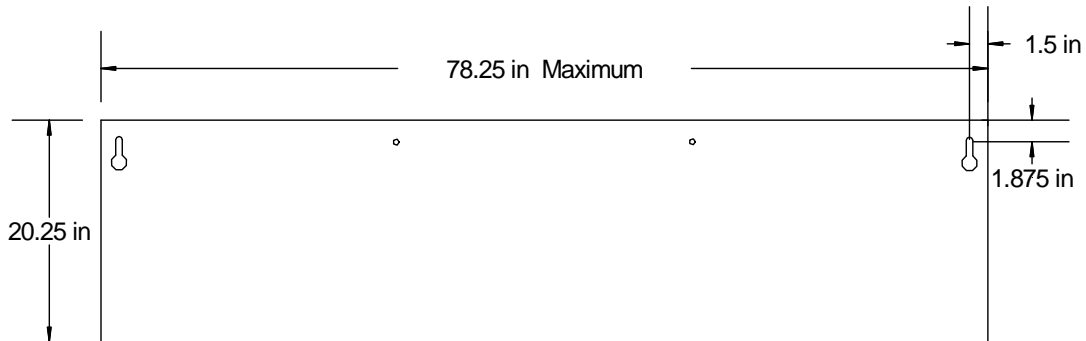
15.9 Equivalency of Test Standard Certification

By James L. Buckner, P.E. @ CBUGK Engineering
(FBC Organization # ANE 1916)

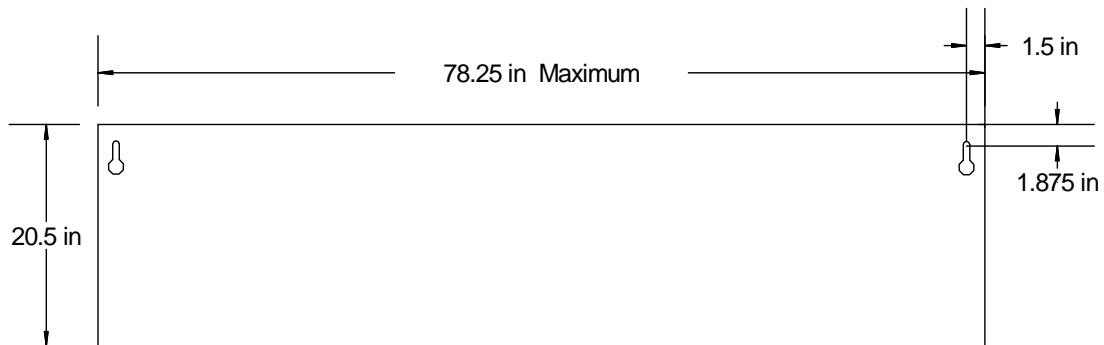
15.10 Certification of Independence

By James L. Buckner, P.E. @ CBUGK Engineering
(FBC Organization # ANE 1916)

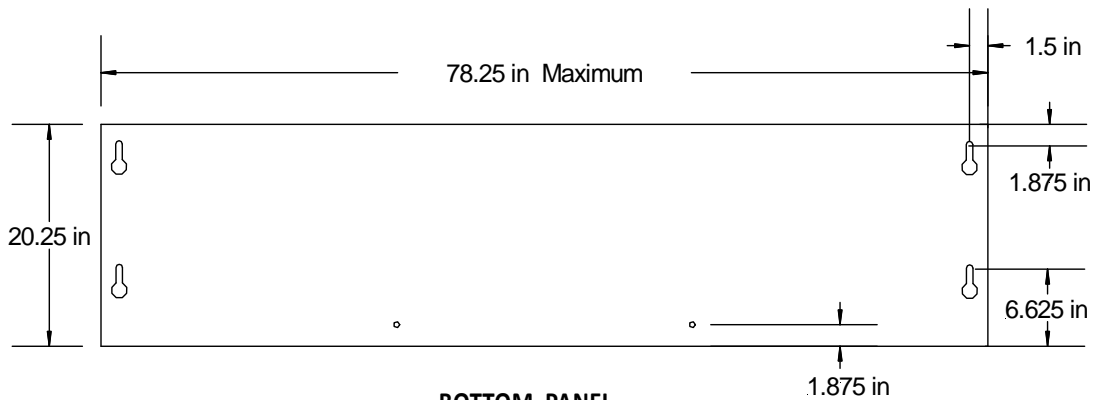
Installation Method Hurricane Protection Systems, LLC. "Storm Shield System™" Typical Panels



TOP PANEL



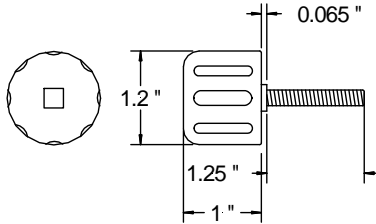
INTERMEDIATE PANEL



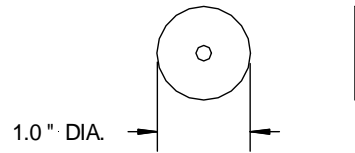
BOTTOM PANEL

Panel Elevation View

Installation Method Hurricane Protection Systems, LLC. "Storm Shield System™" Typical Components



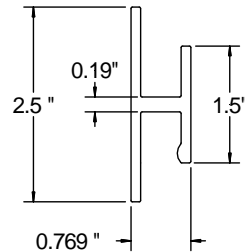
THUMB SCREW



SS / NEOPRENE WASHER

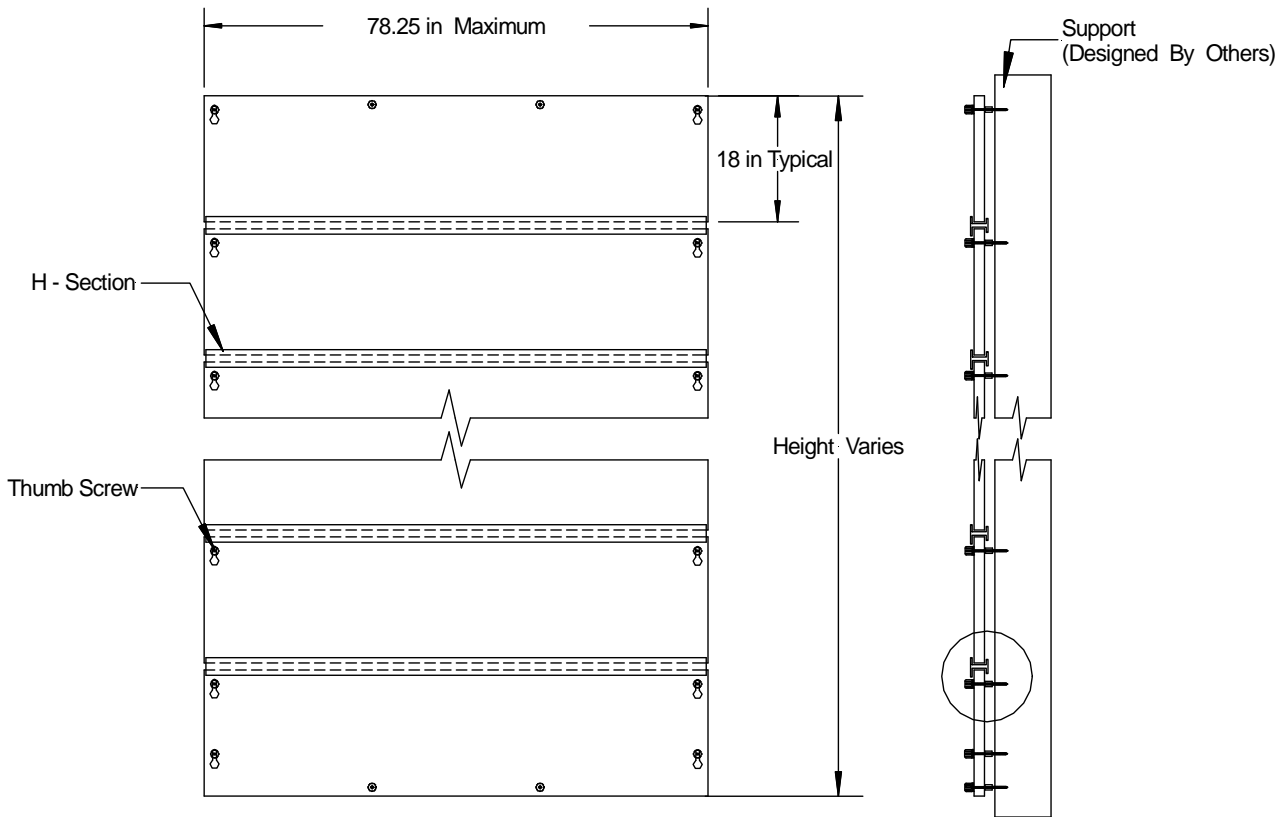


TYPICAL HURRICANE
PANEL ANCHOR SCREW



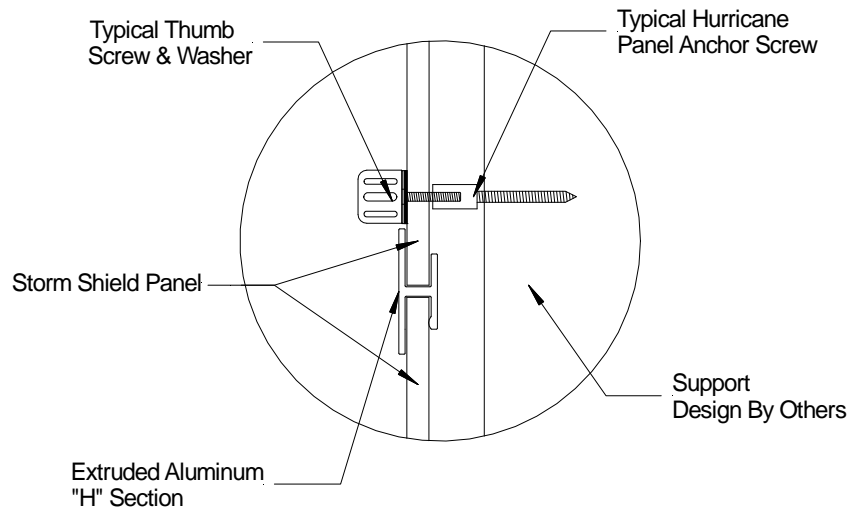
ALUMINUM EXTRUDED
"H" - SECTION

Installation Method Hurricane Protection Systems, LLC. "Storm Shield System™" Typical Attachment to Support



ELEVATION VIEW

SECTION VIEW



ATTACHMENT DETAIL